SCD DNA Sequence (SEQ ID NO:1)

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tcgcactttg cccctgcttg gcagcggata aaaggggget gaggaaatac cggacacgtc     180
cacccgttgc cagctctagc ctttaaattc ccggctcggg acctccacgc accgggctag     240
cgccgacaac cagctagcgt gcaaggcgcc gcggctcagc gcgtaccggc gggcttcgaa     300
accgcagtcc tccggcgacc ccgaactccg ctccggagcc tcagcccccc ggaaagtgat     360
cccggcatcg gagagccaag atgccggccc acttgctgca ggacgatatc tctagctcct     420
ataccaccac caccaccatt acagcgcctc cctccagggt cctgcagaat ggaggagata     480
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tacggctctt tctgatcatt gccaacacaa tggcattcca gaatgatgtc tatgaatggg     840
ctcgtgacca ccgtgcccac cacaagtttt cagaaacaca tgctgatcct cataattccc     900
gacgtggctt tttcttctct cacgtgggtt ggctgcttgt gcgcaaacac ccagctgtca     960
aagagaaggg gagtacgcta gacttgtctg acctagaagc tgagaaactg gtgatgttcc    1020
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aaagcnaggt aaattgtcgg gggagagagt tagcatgtat gaatgtaagg atgagggaag    2040
cgaaggaacc tctcgccatg atcagacata cagctgccta cctaatgagg acttcaagcc    2100
ccaccacata gcatgcttcc tttctctcct ggctcggggt aaaaagtggc tgcggtgttt    2160
ggcaatgcta attcaatgcc gcaacatata gttgaggccg aggataaaga aaagacattt    2220
taagtttgta gtaaaagtgg tctctgctgg ggaagggttt tcttttcttt ttttctttaa    2280
taacaaggag atttcttagt tcatatatca agaagtcttg aagttgggtg tttccagaat    2340
tggtaaaaac agcagctcat agaattttga gtattccatg agctgctcat tacagttctt    2400
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ctgtggcatt tccaaacatc caaaaaaagg gaaggattta aggaggtgaa gtcgggtcaa    2520
aaataaaata tatatacata tatacattgc ttagaacgtt aaactattag agtatttccc    2580
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atttcctctc cactgctgga catgagatgg agaggctgag ggacaggatc tataggcagc    2700
ttctaagagc gaacttcaca taggaaggga tctgagaaca cgttcagggg ttgagaaggt    2760
tactgagtga gttattggga gtcttaataa actagatatt aggtccattc attaattagt    2820
tccagtttct ccttgaaatg agtaaaaact agaaggcttc tctccacagt gttgtgcccc    2880
ttcactcatt ttttttgag gagaaggggg tctctgttaa catctagcct aaagtataca    2940
aactgcctgg ggggcagggt taggaatctc ttcactaccc tgattcttga ttcctggctc    3000
```

FIGURE 1

BEST AVAILABLE COPY

```
taccctgtct gtccctttc tttgaccaga tctttctctt ccctgaacgt tttcttcttt    3060
ccctggacag gcagcctcct ttgtgtgtat tcagaggcag tgatgacttg ctgtccaggc    3120
agctccctcc tgcacacaga atgctcaggg tcactgaacc actgcttctc ttttgaaagt    3180
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cagctggcag tgcaatgctt gtagaagtag gaggaaacag ttctcactgg gaagaagcaa    3540
gggcaagaac ccaagtgcct cacctcgaaa ggaggccctg ttccctggag tcagggtgaa    3600
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tctgttcagc aaactaacca gcattcccta cagcctaggg cagacaatag tatagaagtc    3720
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catcaaagca gaagtctggc tttgctctat taagattgga aatgtacact accaaacact    3840
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tttctaatca cagtgttgca tatgagcctg ccctcactcc ctctgcagaa tccctttgca    4440
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cacgatttgc aggattccct tctgggcttc attctggaaa cttttgttag ggctgctttt    4560
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gtttgctagt atcttgggtg tattctctgt aagtgtagct caaataggtc atcatgaaag    4740
gttaaaaaag cgaggtggcc atgttatgct ggtggttgcc agggcctcca accactgtgc    4800
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aatgcttttt agaaagcatt ttgggatcct tcagcacagg aattctcaag acctgagtat    4980
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acaagaataa ttttggaata atttctatta atatcaactc tgaagctaat tgtactaatc    5280
tgagattgtg tttgttcata ataaaagtga agtgaatctg attgcactg               5329
```

FIGURE 1 (CONT.)

CA12 DNA Sequence (SEQ ID NO:2)

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gtactcgcca cggcacccag gctgcgcgca cgcggtcccg gtgtgcagct ggagagcgag      60
cggccaccgg gagcccccgg cacagcccgc gcccgccccg caggagcccg cgaagatgcc     120
ccggcgcagc ctgcacgcgg cggccgtgct cctgctggtg atcttaaagg aacagccttc     180
cagcccggcc ccagtgaacg gttccaagtg gacttatttt ggtcctgatg gggagaatag     240
ctggtccaag aagtacccgt cgtgtggggg cctgctgcag tcccccatag acctgcacag     300
tgacatcctc cagtatgacg ccagcctcac gcccctcgag ttccaaggct acaatctgtc     360
tgccaacaag cagtttctcc tgaccaacaa tggccattca gtgaagctga acctgccctc     420
ggacatgcac atccagggcc tccagtctcg ctacagtgcc acgcagctgc acctgcactg     480
ggggaacccg aatgacccgc acggctctga gcacaccgtc agcggacagc acttcgccgc     540
cgagctgcac attgtccatt ataactcaga cctttatcct gacgccagca ctgccagcaa     600
caagtcagaa ggcctcgctg tcctggctgt tctcattgag atgggctcct tcaatccgtc     660
ctatgacaag atcttcagtc accttcaaca tgtaaagtac aaaggccagg aagcattcgt     720
cccgggattc aacattgaag agctgcttcc ggagaggacc gctgaatatt accgctaccg     780
ggggtccctg accacacccc cttgcaaccc cactgtgctc tggacagttt tccgaaaccc     840
cgtgcaaatt tcccaggagc agctgctggc tttggagaca gccctgtact gcacacacat     900
ggacgaccct tcccccagag aaatgatcaa caacttccgg caggtccaga agttcgatga     960
gaggctggta tacacctcct tctcccaagt gcaagtctgt actgcggcag gactgagtct    1020
gggcatcatc ctctcactgg ccctggctgg cattcttggc atctgtattg tggtggtggt    1080
gtccatttgg cttttcagaa ggaagagtat caaaaaaggt gataacaagg gagtcattta    1140
caagccagcc accaagatgg agactgaggc ccacgcttga ggtccccgga gctcccgggc    1200
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tgtaaggaca gaataataca atattaagtc caaatccaac ctcctgtcag tggagcagtt    2040
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ctgtgtcctg gaggagacat gagttccgag atgacccaat ctgcctttga atctggagga    2160
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ccctctgact ctaagaattc tctcttctgg aatcgcttga acccaggagg cggaggttgc    2700
agtaagccaa ggtcatgcca ctgcactcta gcctgggtga cagagcgaga ctccatctca    2760
aaaaaaaaaa aaaaa                                                     2775
```

FIGURE 2

PIK3R4 DNA Sequence (SEQ ID NO:3)

```
gcacgagggg agttcggcgt ttgctggggc tgcagcagct gaagtgtagt gttttcttgg      60
gactggcggt ctgcacttct ctcccgggtt ccatctcccc ccgcccggtg gtgaggccct     120
cgaggagggc tcggacgggt gtagcgatcc gcgctagagg aagacgaggc ccgggaacgc     180
atgtccccca gggcaggtta gggggctgga ggggtcaaat cccggggtac ttgtggagac     240
tctttagcgt ggcttcttct ctctgctgag accccgagag ctttcccagt tctcctccca     300
ggaccaccgg ggttcctgaa gatcgggact tttctgcgcc cctccaccaa cagcccatct     360
cctgtctatg aagaaagacc cttcgtagaa acaacttccc cgctgctgac gcgttttccc     420
gtcccgtccc cgaagtagtc tactatgacc tcgttgtgag cctctgaacg attttgacac     480
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attgggttct tctaactgat tttgccagtt ttaagcccac ttatcttcca gaagacaacc    1080
cggcagattt caattatttc tttgacacat cacggaggag aacttgctat attgctcctg    1140
aacgttttgt tgatggtggg atgtttgcca ctgagttaga atatatgaga gatccttcaa    1200
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aacgtttaga ggcagaagat tacttaaaac agcagcgtgg caatgccttt cctgaaatat    1500
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cggaatacat tctgccaggc atagcccact tagcccaaga tgatgctact atcgttagac    1980
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gcttgttcag acatcttcac atgcgtcaga agaaacgaaa tggttctctt cccgactgcc    2820
ctccgccaga ggatcctgcc atagcacagc ttctgaagaa gttgctctca cagggaatga    2880
cagaggaaga ggaagacaaa cttctggcac tgaaagactt catgatgaaa tctaataaag    2940
caaaggccaa tatagtggac cagagccatc ttcatgatag tagtcagaaa ggtgtaattg    3000
```

FIGURE 3

```
acttggcagc tttaggcata actgggagac aagttgatct tgttaaaacc aaacaagaac    3060
cagatgacaa acgggccaga aaacatgtaa aacaagactc aaatgtaaat gaagaatgga    3120
aaagcatgtt tgggtcactg gacccaccaa acatgccaca ggccctacct aaagggagtg    3180
atcaggaggt gattcagact gggaaacctc ctcgttccga gtcctctgct ggcatttgtg    3240
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tcgaggggggg gcccggtacc                                              5060
```

FIGURE 3 (CONT.)

PLD3 DNA Sequence (SEQ ID NO:4)

ctctttataa tttagtttcc atagaagtta tatgtgcatt taaaaaaatt caatgctgga 60
gcgaccgtgt ctggggagcc gagccccgct tctcgctgcg gtgagcccgg actggggcac 120
gcactgcgca gactccccgc tgcagtgggc ggagtcccac aggccccgcc cctcctccca 180
ccctcgttca gcctgtccag acagaagctg gggcccagcg gaggtagcag cagacgcctg 240
agagcgaggc cgaggccctc agggtttgga gaccctgaca cacccacctt ctcacctggg 300
ctctgcgtat cccccagcct tgagggaaga tgaagcctaa actgatgtac caggagctga 360
aggtgcctgc agaggagccc gccaatgagc tgcccatgaa tgagattgag gcgtggaagg 420
ctgcggaaaa gaaagcccgc tgggtcctgc tggtcctcat tctggcggtt gtgggcttcg 480
gagcctgatg actcagctgt ttctatggga atacggcgac ttgcatctct ttgggcccaa 540
ccagcgccca gccccctgct atgacccttg cgaagcagtg ctggtggaaa gcattcctga 600
gggcctggac ttccccaatg cctccacggg gaacccttcc accagccagg cctggctggg 660
cctgctcgcc ggtgcgcaca gcagcctgga catcgcctcc ttctactgga ccctcaccaa 720
caatgacacc cacacgcagg agccctctgc ccagcagggt gaggaggtcc tccggcagct 780
gcagaccctg gcaccaaagg gcgtgaacgt ccgcatcgct gtgagcaagc ccagcgggcc 840
ccagccacag gcggacctgc aggctctgct gcagagcggt gcccaggtcc gcatggtgga 900
catgcagaag ctgacccatg gcgtcctgca taccaagttc tgggtggtgg accagaccca 960
cttctacctg ggcagtgcca acatggactg gcgttcactg acccaggtca aggagctggg 1020
cgtggtcatg tacaactgca gctgcctggc tcgagacctg accaagatct ttgaggccta 1080
ctggttcctg ggccaggcag gcagctccat cccatcaact tggccccggt tctatgacac 1140
ccgctacaac caagagacac caatggagat ctgcctcaat ggaacccctg ctctggccta 1200
cctggcgagt gcgcccccac ccctgtgtcc aagtggccgc actccagacc tgaaggctct 1260
actcaacgtg gtggacaatg cccggagttt catctacgtc gctgtcatga actacctgcc 1320
cactctggag ttctcccacc ctcacaggtt ctggcctgcc attgacgatg ggctgcggcg 1380
ggccacctac gagcgtggcg tcaaggtgcg cctgctcatc agctgctggg gacactcgga 1440
gccatccatg cgggccttcc tgctctctct ggctgccctg cgtgacaacc atacccactc 1500
tgacatccag gtgaaactct ttgtggtccc cgcggatgag gcccaggctc gaatcccata 1560
tgcccgtgtc aaccacaaca agtacatggt gactgaacgc gccacctaca tcggaacctc 1620
caactggtct ggcaactact tcacggagac ggcgggcacc tcgctgctgg tgacgcagaa 1680
tgggaggggc ggcctgcgga gccagctgga ggccattttc ctgagggact gggactcccc 1740
ttacattcat gaccttgaca cctcagctga cagcgtgggc aacgcctgcc gcctgctctg 1800
aggcccgatc cagtgggcag gccaaggcct gctgggcccc cgcggaccca ggtgctctgg 1860
gtcacggtcc ctgtccccgc acccccgctt ctgtctgccc cattgtggct cctcaggctc 1920
tctcccctgc tctcccacct ctacctccac ccccaccggc ctgacgctgt ggccccggga 1980
cccagcagag ctgggggagg gatcagcccc caaagaaatg ggggtgcatg ctggcctgcc 2040
ccctggccca cccccacttt ccagggcaaa aagggcccag ggttataata agtaaataac 2100
ttgtctgtaa aaaaaaaaaa aaaaaaaaaa a

FIGURE 4

HSPD1 DNA Sequence (SEQ ID NO:5)

```
ggcacgaggc gacgacctgt ctcgccgagc gcacgccttg ccgccgcccc gcagaaatgc      60
ttcggttacc cacagtcttt cgccagatga gaccggtgtc cagggtactg gctcctcatc     120
tcactcgggc ttatgccaaa gatgtaaaat ttggtgcaga tgcccgagcc ttaatgcttc     180
aaggtgtaga ccttttagcc gatgctgtgg ccgttacaat ggggccaaag ggaagaacag     240
tgattattga gcagagttgg ggaagtccca aagtaacaaa agatggtgtg actgttgcaa     300
agtcaattga cttaaaagat aaatacaaaa acattggagc taaacttgtt caagatgttg     360
ccaataacac aaatgaagaa gctggggatg gcactaccac tgctactgta ctggcacgct     420
ctatagccaa ggaaggcttc gagaagatta gcaaaggtgc taatccagtg gaaatcagga     480
gaggtgtgat gttagctgtt gatgctgtaa ttgctgaact taaaaagcag tctaaacctg     540
tgaccacccc tgaagaaatt gcacaggttg ctacgatttc tgcaaacgga gacaaagaaa     600
ttggcaatat catctctgat gcaatgaaaa aagttggaag aaagggtgtc atcacagtaa     660
aggatggaaa aacactgaat gatgaattag aaattattga aggcatgaag tttgatcgag     720
gctatatttc tccatacttt attaatacat caaaaggtca gaaatgtgaa ttccaggatg     780
cctatgttct gttgagtgaa aagaaaattt ctagtatcca gtccattgta cctgctcttg     840
aaattgccaa tgctcaccgt aagcctttgg tcataatcgc tgaagatgtt gatggagaag     900
ctctaagtac actcgtcttg aataggctaa aggttggtct tcaggttgtg gcagtcaagg     960
ctccagggtt tggtgacaat agaaagaacc agcttaaaga tatggctatt gctactggtg    1020
gtgcagtgtt tggagaagag ggattgaccc tgaatcttga agacgttcag cctcatgact    1080
taggaaaagt tggagaggtc attgtgacca aagacgatgc catgctctta aaaggaaaag    1140
gtgacaaggc tcaaattgaa aaacgtattc aagaaatcat tgagcagtta gatgtcacaa    1200
ctagtgaata tgaaaaggaa aaactgaatg aacggcttgc aaaactttca gatggagtgg    1260
ctgtgctgaa ggttggtggg acaagtgatg ttgaagtgaa tgaaaagaaa gacagagtta    1320
cagatgccct taatgctaca agagctgctg ttgaagaagg cattgttttg ggaggggggtt    1380
gtgccctcct tcgatgcatt ccagccttgg actcattgac tccagctaat gaagatcaaa    1440
aaattggtat agaaattatt aaaagaacac tcaaaattcc agcaatgacc attgctaaga    1500
atgcaggtgt tgaaggatct ttgatagttg agaaaattat gcaaagttcc tcagaagttg    1560
gttatgatgc tatggctgga gattttgtga atatggtgga aaaaggaatc attgacccaa    1620
caaaggttgt gagaactgct ttattggatg ctgctggtgt ggcctctctg ttaactacag    1680
cagaagttgt agtcacagaa attcctaaag aagagaagga ccctggaatg ggtgcaatgg    1740
gtggaatggg aggtggtatg ggaggtggca tgttctaact cctagactag tgctttacct    1800
ttattaatga actgtgacag gaagcccaag gcagtgttcc tcaccaataa cttcagagaa    1860
gtcagttgga gaaaatgaag aaaaaggctg gctgaaaatc actataacca tcagttactg    1920
gtttcagttg acaaaatata taatggttta ctgctgtcat tgtccatgcc tacagataat    1980
ttattttgta tttttgaata aaaaacattt gtacattcct gatactgggt acaagagcca    2040
tgtaccagtg tactgctttc aacttaaatc actgaggcat ttttactact attctgttaa    2100
aatcaggatt ttagtgcttg ccaccaccag atgagaagtt aagcagcctt tctgtggaga    2160
gtgagaataa ttgtgtacaa agtagagaag tatccaatta tgtgacaacc tttgtgtaat    2220
aaaaatttgt ttaaagttaa aaaaaaaaaa aaaaaaaa                            2258
```

FIGURE 5

ZPK Variant 2 DNA Sequence (SEQ ID NO:6)

```
agcatccgga gcggagctgc agcagcgccg ccttttgtgc tgcggccgcg gagcccccga     60
gggcccagtg ttcaccatca taccaggggc cagaggcgat ggcttgcctc catgagaccc    120
gaacaccctc tccttccttt gggggctttg tgtctaccct aagtgaggca tccatgcgca    180
agctggaccc agacacttct gactgcactc ccgagaagga cctgacgcct acccatgtcc    240
tgcagctaca tgagcaggat gcaggggcgc cagggggagc agctgggtca cctgagagtc    300
gggcatccag agttcgagct gacgaggtgc gactgcagtg ccagagtggc agtggcttcc    360
ttgagggcct ctttggctgc ctgcgccctg tctggaccat gattggcaaa gcctactcca    420
ctgagcacaa gcagcagcag gaagaccttt gggaggtccc ctttgaggaa atcctggacc    480
tgcagtgggt gggctcaggg gcccagggtg ctgtcttcct ggggcgcttc cacggggagg    540
aggtggctgt gaagaaggtg cgagacctca aagaaaccga catcaagcac ttgcgaaagc    600
tgaagcaccc caacatcatc actttcaagg gtgtgtgcac ccaggctccc tgctactgca    660
tcctcatgga gttctgcgcc cagggccagc tgtatgaggt actgcgggct ggccgccctg    720
tcaccccctc cttactggtt gactggtcca tgggcatcgc tggtggcatg aactacctgc    780
acctgcacaa gattatccac agggatctca agtcacccaa catgctaatc acctacgacg    840
atgtggtgaa gatctcagat tttggcactt ccaaggagct gagtgacaag agcaccaaga    900
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ctgagaaggt cgacatctgg tcctttggcg tggtgctatg ggaactgctg actggtgaga   1020
tcccctacaa agacgtagat tcctcagcca ttatctgggg tgtgggaagc aacagtctcc   1080
atctgcccgt gccctccagt tgcccagatg gtttcaagat cctgcttcgc cagtgctgga   1140
atagcaaacc acgaaatcgc ccatcattcc gacagatcct gctgcatctg gacattgcct   1200
cagctgatgt actctccaca ccccaggaga cttactttaa gtcccaggca gagtggcggg   1260
aagaagtaaa actgcacttt gaaaagatta agtcagaagg gacctgtctg caccgcctag   1320
aagaggaact ggtgatgagg aggagggagg agctcagaca cgccctggac atcagggagc   1380
actatgaaag gaagctggag agagccaaca acctgtatat ggaacttaat gccctcatgt   1440
tgcagctgga actcaaggag agggagctgc tcaggcgaga gcaagcttta gagcggaggt   1500
gcccaggcct gctgaagcca cacccttccc ggggcctcct gcatggaaac acaatggaga   1560
agcttatcaa gaagaggaat gtgccacaga agctgtcacc ccatagcaaa aggccagata   1620
tcctcaagac ggagtctttg ctccctaaac tagatgcagc cctgagtggg gtggggcttc   1680
ctgggtgtcc taaggccccc ccctcaccag gacggagtcg ccgtggcaag acccgtcacc   1740
gcaaggccag cgccaagggg agctgtgggg acctgcctgg gcttcgtaca gctgtgccac   1800
cccatgaacc tggaggacca ggaagcccag ggggcctagg agggggaccc tcagcctggg   1860
aggcctgccc tcccgccctc cgtgggcttc atcatgacct cctgctccgc aaaatgtctt   1920
catcgtcccc agacctgctg tcagcagcac tagggtcccg gggccggggg gccacaggcg   1980
gagctgggga tcctggctca ccacctccgg cccggggtga caccccacca agtgagggct   2040
cagcccctgg ctccaccagc ccagattcac ctgggggagc caaaggggaa ccacctcctc   2100
cagtagggcc tggtgaaggt gtggggcttc tgggaactgg aagggaaggg acctcaggcc   2160
ggggaggaag ccgggctggg tcccagcact tgaccccagc tgcactgctg tacagggctg   2220
ccgtcacccg aagtcagaaa cgtggcatct catcggaaga ggaggaagga gaggtagaca   2280
gtgaagtaga gctgacatca agccagaggt ggcctcagag cctgaacatg cgccagtcac   2340
tatctacctt cagctcagag aatccatcag atggggagga aggcacagct agtgaacctt   2400
cccccagtgg cacacctgaa gttggcagca ccaacactga tgagcggcca gatgagcggt   2460
ctgatgacat gtgctcccag ggctcagaaa tcccactgga cccacctcct tcagaggtca   2520
tccctggccc tgaacccagc tccctgccca ttccacacca ggaacttctc agagagcggg   2580
gccctcccaa ttctgaggac tcagactgtg acagcactga attggacaac tccaacagcg   2640
ttgatgcctt gcggccccca gcttccctcc ctccatgaaa gccactcgta ttccttgtac   2700
atagagaaat atttatatgg attatatata tatacatata tatatatata tgcgccacat   2760
aatcaacaga aagatggggc tgtcccagcc gtaagtcagg ctcgagggag actgatcccc   2820
tgaccaattc acctgataaa ctctagggac actggcagct gtggaaatga atgaggcaca   2880
gccgtagagc tgtggctaag ggcaagcccc ttcctgcccc accccattcc ttatattcag   2940
caagcaacaa ggcaatagaa aagccagggt tgtctttata ttctttatcc ccaaataata   3000
gggggtgggg ggaggggcgg tgggaggggc aggagagaaa accacttaga ctgcactttt   3060
ctgttccgtt tactctgttt acacattttg cacttgggag gagggaggct aaggctgggt   3120
cctccccctct gaggtttctc aggtggcaat gtaactcatt tttttgtccc accatttatc   3180
ttctctgccc aagccctgtc ttaaggccca gggggaggtt aggagactga tagcatgtga   3240
tggctcaggc tgaagaaccg gggtgctgtt taagtccctg cttttatcct ggtgcctgat   3300
tggggtgggg actgtcctac tgtaacccct gtgaaaaacc ttgaaatata acactccatg   3360
cagga                                                              3365
```

FIGURE 6

SCD Amino Acid Sequence (SEQ ID NO:7)

```
MPAHLLQDDI SSSYTTTTTI TAPPSRVLQN GGDKLETMPL YLEDDIRPDI KDDIYDPTYK     60
DKEGPSPKVE YVWRNIILMS LLHLGALYGI TLIPTCKFYT WLWGVFYYFV SALGITAGAH    120
RLWSHRSYKA RLPLRLFLII ANTMAFQNDV YEWARDHRAH HKFSETHADP HNSRRGFFFS    180
HVGWLLVRKH PAVKEKGSTL DLSDLEAEKL VMFQRRYYKP GLLLMCFILP TLVPWYFWGE    240
TFQNSVFVAT FLRYAVVLNA TWLVNSAAHL FGYRPYDKNI SPRENILVSL GAVGEGFHNY    300
HHSFPYDYSA SEYRWHINFT TFFIDCMAAL GLAYDRKKVS KAAILARIKR TGDGNYKSG     359
```

FIGURE 7

CA12 Amino Acid Sequence (SEQ ID NO:8)

```
MPRRSLHAAA VLLLVILKEQ PSSPAPVNGS KWTYFGPDGE NSWSKKYPSC GGLLQSPIDL     60
HSDILQYDAS LTPLEFQGYN LSANKQFLLT NNGHSVKLNL PSDMHIQGLQ SRYSATQLHL    120
HWGNPNDPHG SEHTVSGQHF AAELHIVHYN SDLYPDASTA SNKSEGLAVL AVLIEMGSFN    180
PSYDKIFSHL QHVKYKGQEA FVPGFNIEEL LPERTAEYYR YRGSLTTPPC NPTVLWTVFR    240
NPVQISQEQL LALETALYCT HMDDPSPREM INNFRQVQKF DERLVYTSFS QVQVCTAAGL    300
SLGIILSLAL AGILGICIVV VVSIWLFRRK SIKKGDNKGV IYKPATKMET EAHA          354
```

FIGURE 8

PIK3R4 Amino Acid Sequence (SEQ ID NO:9)

```
MGNQLAGIAP SQILSVESYF SDIHDFEYDK SLGSTRFFKV ARAKHREGLV VVKVFAIQDP     60
TLPLTSYKQE LEELKIRLNS AQNCLPFQKA SEKASEKAAM LFRQYVRDNL YDRISTRPFL    120
NNIEKRWIAF QILTAVDQAH KSGVRHGDIK TENVMVTSWN WVLLTDFASF KPTYLPEDNP    180
ADFNYFFDTS RRRTCYIAPE RFVDGGMFAT ELEYMRDPST PLVDLNSNQR TRGELKRAMD    240
IFSAGCVIAE LFTEGVPLFD LSQLLAYRNG HFFPEQVLNK IEDHSIRELV TQMIHREPDK    300
RLEAEDYLKQ QRGNAFPEIF YTFLQPYMAQ FAKETFLSAD ERILVIRKDL GNIIHNLCGH    360
DLPEKAEGEP KENGLVILVS VITSCLQTLK YCDSKLAALE LILHLAPRLS VEILLDRITP    420
YLLHFSNDSV PRVRAEALRT LTKVLALVKE VPRNDINIYP EYILPGIAHL AQDDATIVRL    480
AYAENIALLA ETALRFLELV QLKNLNMEND PNNEEIDEVT HPNGNYDTEL QALHEMVQQK    540
VVTLLSDPEN IVKQTLMENG ITRLCVFFGR QKANDVLLSH MITFLNDKND WHLRGAFFDS    600
IVGVAAYVGW QSSSILKPLL QQGLSDAEEF VIVKALYALT CMCQLGLLQK PHVYEFASDI    660
APFLCHPNLW IRYGAVGFIT VVARQISTAD VYCKLMPYLD PYITQPIIQI ERKLVLLSVL    720
KEPVSRSIFD YALRSKDITS LFRHLHMRQK KRNGSLPDCP PPEDPAIAQL LKKLLSQGMT    780
EEEEDKLLAL KDFMMKSNKA KANIVDQSHL HDSSQKGVID LAALGITGRQ VDLVKTKQEP    840
DDKRARKHVK QDSNVNEEWK SMFGSLDPPN MPQALPKGSD QEVIQTGKPP RSESSAGICV    900
PLSTSSQVPE VTTVQNKKPV IPVLSSTILP STYQIRITTC KTELQQLIQQ KREQCNAERI    960
AKQMMENAEW ESKPPPPGWR PKGLLVAHLH EHKSAVNRIR VSDEHSLFAT CSNDGTVKIW   1020
NSQKMEGKTT TTRSILTYSR IGGRVKTLTF CQGSHYLAIA SDNGAVQLLG IEASKLPKSP   1080
KIHPLQSRIL DQKEDGCVVD MHHFNSGAQS VLAYATVNGS LVGWDLRSSS NAWTLKHDLK   1140
SGLITSFAVD IHQCWLCIGT SSGTMACWDM RFQLPISSHC HPSRARIRRL SMHPLYQSWV   1200
IAAVQGNNEV SMWDMETGDR RFTLWASSAP PLSELQPSPH SVHGIYCSPA DGNPILLTAG   1260
SDMKIRFWDL AYPERSYVVA GSTSSPSVSY YRKIIEGTEV VQEIQNKQKV GPSDDTPRRG   1320
PESLPVGHHD IITDVATFQT TQGFIVTASR DGIVKVWK                           1358
```

FIGURE 9

PLD3 Amino Acid Sequence (SEQ ID NO:10)

```
MTQLFLWEYG DLHLFGPNQR PAPCYDPCEA VLVESIPEGL DFPNASTGNP STSQAWLGLL     60
AGAHSSLDIA SFYWTLTNND THTQEPSAQQ GEEVLRQLQT LAPKGVNVRI AVSKPSGPQP    120
QADLQALLQS GAQVRMVDMQ KLTHGVLHTK FWVVDQTHFY LGSANMDWRS LTQVKELGVV    180
MYNCSCLARD LTKIFEAYWF LGQAGSSIPS TWPRFYDTRY NQETPMEICL NGTPALAYLA    240
SAPPPLCPSG RTPDLKALLN VVDNARSFIY VAVMNYLPTL EFSHPHRFWP AIDDGLRRAT    300
YERGVKVRLL ISCWGHSEPS MRAFLLSLAA LRDNHTHSDI QVKLFVVPAD EAQARIPYAR    360
VNHNKYMVTE RATYIGTSNW SGNYFTETAG TSLLVTQNGR GGLRSQLEAI FLRDWDSPYI    420
HDLDTSADSV GNACRLL                                                   437
```

FIGURE 10

HSPD1 Amino Acid Sequence (SEQ ID NO:11)

```
MLRLPTVFRQ MRPVSRVLAP HLTRAYAKDV KFGADARALM LQGVDLLADA VAVTMGPKGR     60
TVIIEQSWGS PKVTKDGVTV AKSIDLKDKY KNIGAKLVQD VANNTNEEAG DGTTTATVLA    120
RSIAKEGFEK ISKGANPVEI RRGVMLAVDA VIAELKKQSK PVTTPEEIAQ VATISANGDK    180
EIGNIISDAM KKVGRKGVIT VKDGKTLNDE LEIIEGMKFD RGYISPYFIN TSKGQKCEFQ    240
DAYVLLSEKK ISSIQSIVPA LEIANAHRKP LVIIAEDVDG EALSTLVLNR LKVGLQVVAV    300
KAPGFGDNRK NQLKDMAIAT GGAVFGEEGL TLNLEDVQPH DLGKVGEVIV TKDDAMLLKG    360
KGDKAQIEKR IQEIIEQLDV TTSEYEKEKL NERLAKLSDG VAVLKVGGTS DVEVNEKKDR    420
VTDALNATRA AVEEGIVLGG GCALLRCIPA LDSLTPANED QKIGIEIIKR TLKIPAMTIA    480
KNAGVEGSLI VEKIMQSSSE VGYDAMAGDF VNMVEKGIID PTKVVRTALL DAAGVASLLT    540
TAEVVVTEIP KEEKDPGMGA MGGMGGGMGG GMF                                 573
```

FIGURE 11

ZPK Variant 2 Amino Acid Sequence (SEQ ID NO:12)

```
MACLHETRTP SPSFGGFVST LSEASMRKLD PDTSDCTPEK DLTPTHVLQL HEQDAGGPGG     60
AAGSPESRAS RVRADEVRLQ CQSGSGFLEG LFGCLRPVWT MIGKAYSTEH KQQQEDLWEV    120
PFEEILDLQW VGSGAQGAVF LGRFHGEEVA VKKVRDLKET DIKHLRKLKH PNIITFKGVC    180
TQAPCYCILM EFCAQGQLYE VLRAGRPVTP SLLVDWSMGI AGGMNYLHLH KIIHRDLKSP    240
NMLITYDDVV KISDFGTSKE LSDKSTKMSF AGTVAWMAPE VIRNEPVSEK VDIWSFGVVL    300
WELLTGEIPY KDVDSSAIIW GVGSNSLHLP VPSSCPDGFK ILLRQCWNSK PRNRPSFRQI    360
LLHLDIASAD VLSTPQETYF KSQAEWREEV KLHFEKIKSE GTCLHRLEEE LVMRRREELR    420
HALDIREHYE RKLERANNLY MELNALMLQL ELKERELLRR EQALERRCPG LLKPHPSRGL    480
LHGNTMEKLI KKRNVPQKLS PHSKRPDILK TESLLPKLDA ALSGVGLPGC PKAPPSPGRS    540
RRGKTRHRKA SAKGSCGDLP GLRTAVPPHE PGGPGSPGGL GGGPSAWEAC PPALRGLHHD    600
LLLRKMSSSS PDLLSAALGS RGRGATGGAG DPGSPPPARG DTPPSEGSAP GSTSPDSPGG    660
AKGEPPPPVG PGEGVGLLGT GREGTSGRGG SRAGSQHLTP AALLYRAAVT RSQKRGISSE    720
EEEGEVDSEV ELTSSQRWPQ SLNMRQSLST FSSENPSDGE EGTASEPSPS GTPEVGSTNT    780
DERPDERSDD MCSQGSEIPL DPPPSEVIPG PEPSSLPIPH QELLRERGPP NSEDSDCDST    840
ELDNSNSVDA LRPPASLPP                                                 859
```

FIGURE 12

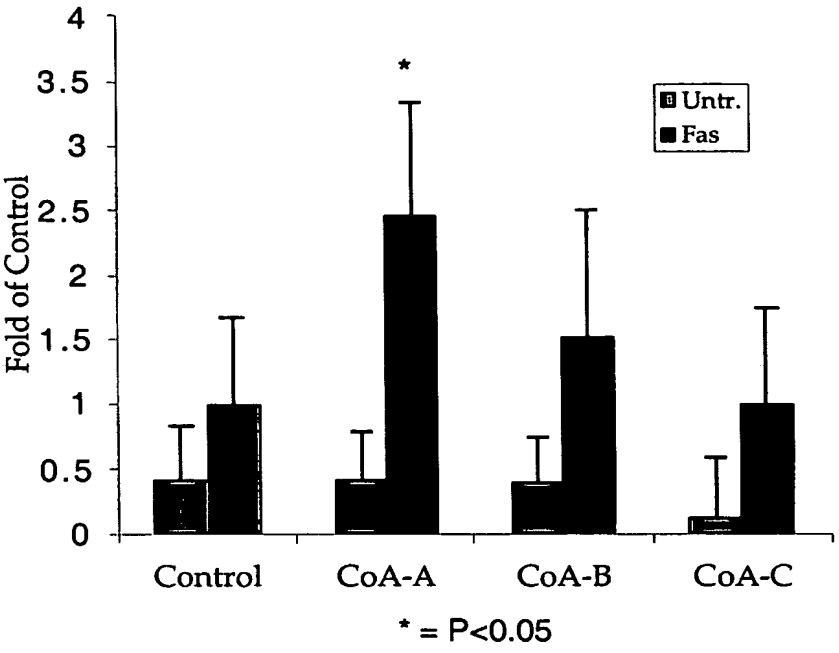

FIGURE 13A

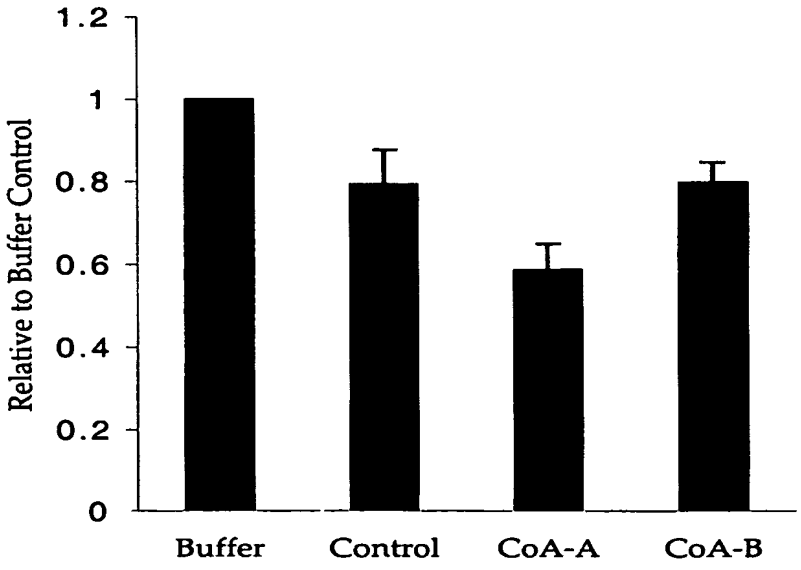

FIGURE 13B

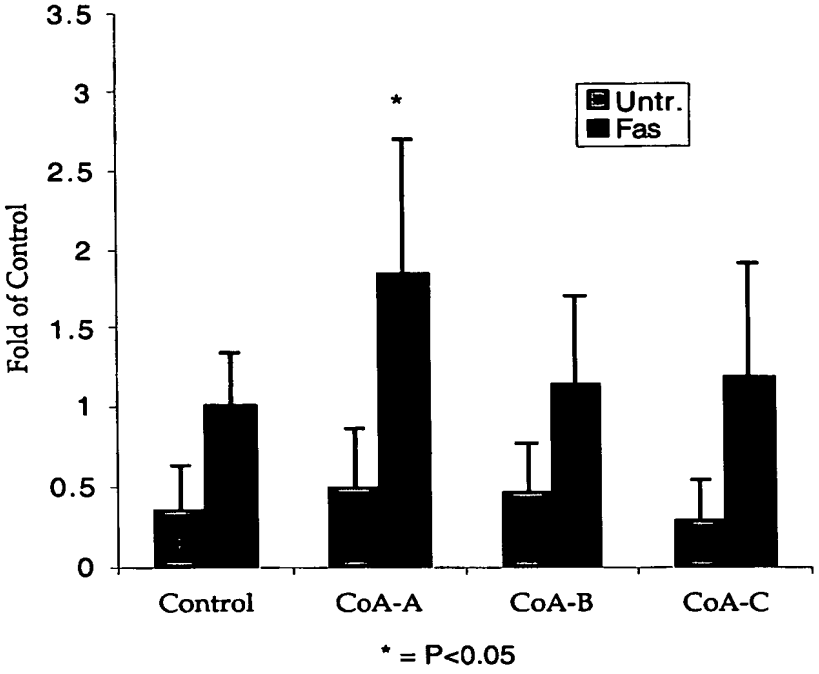

FIGURE 14A

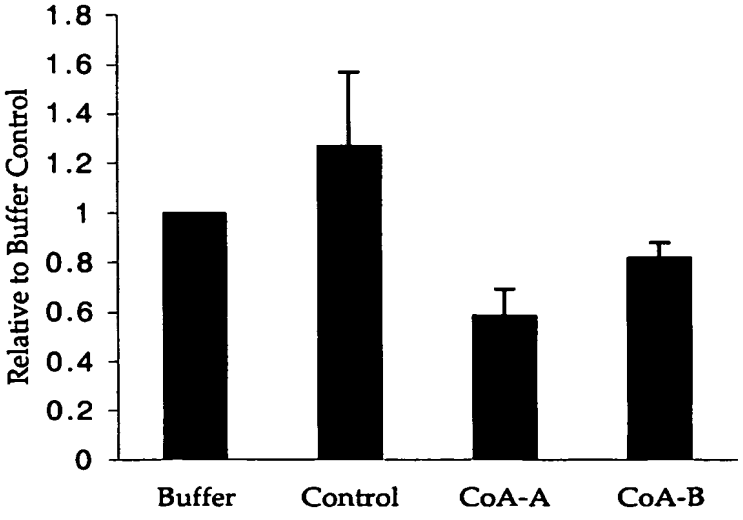

FIGURE 14B

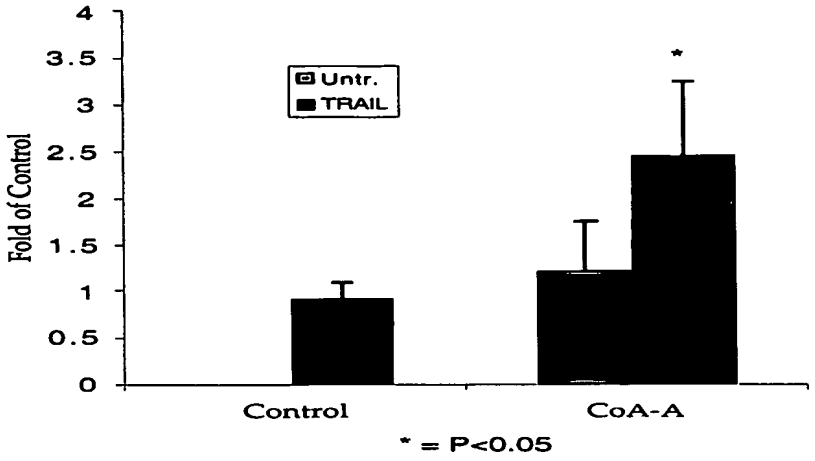

FIGURE 15A

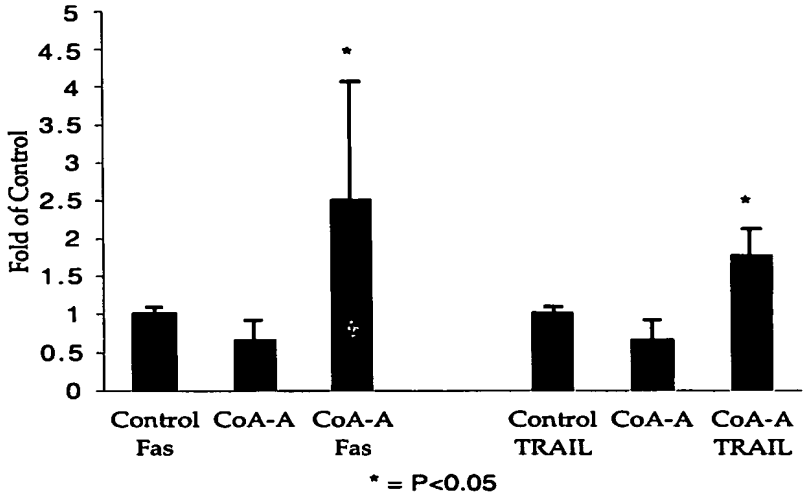

FIGURE 15B

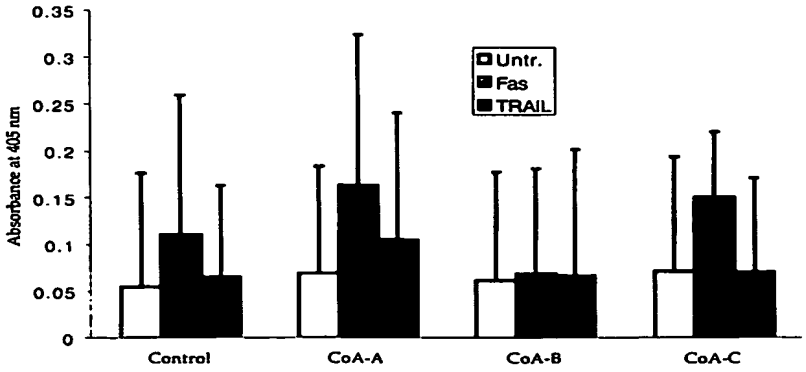

FIGURE 16

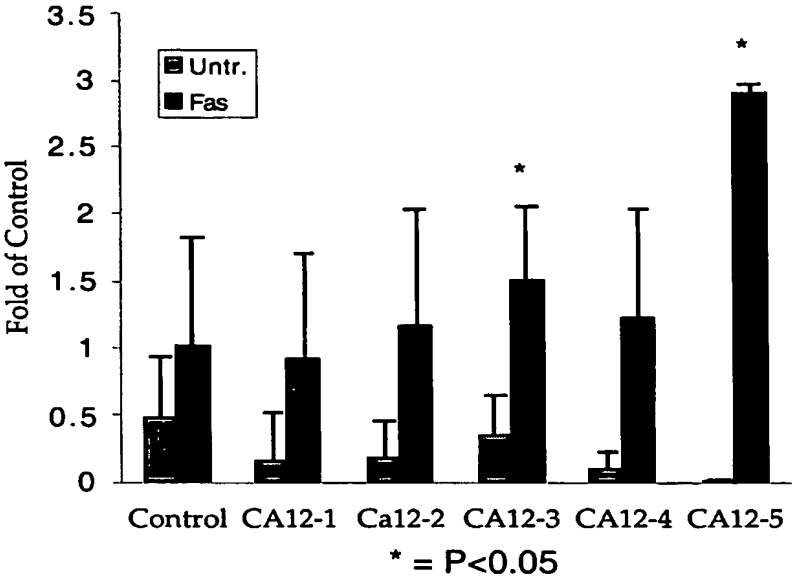

FIGURE 17A

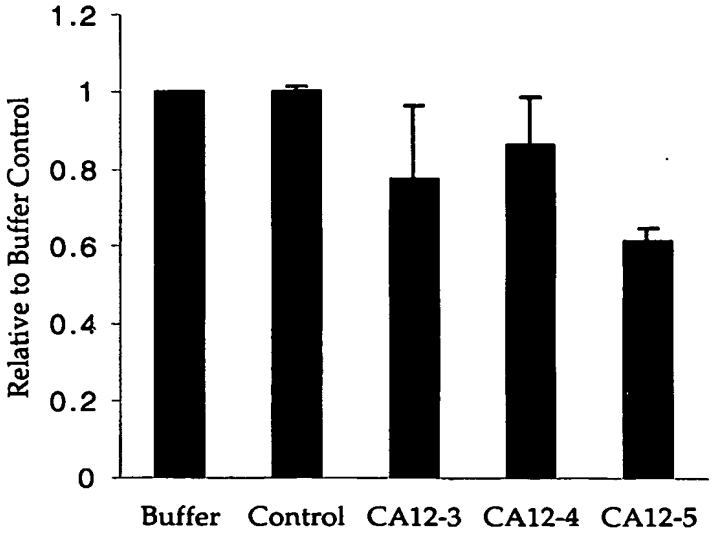

FIGURE 17B

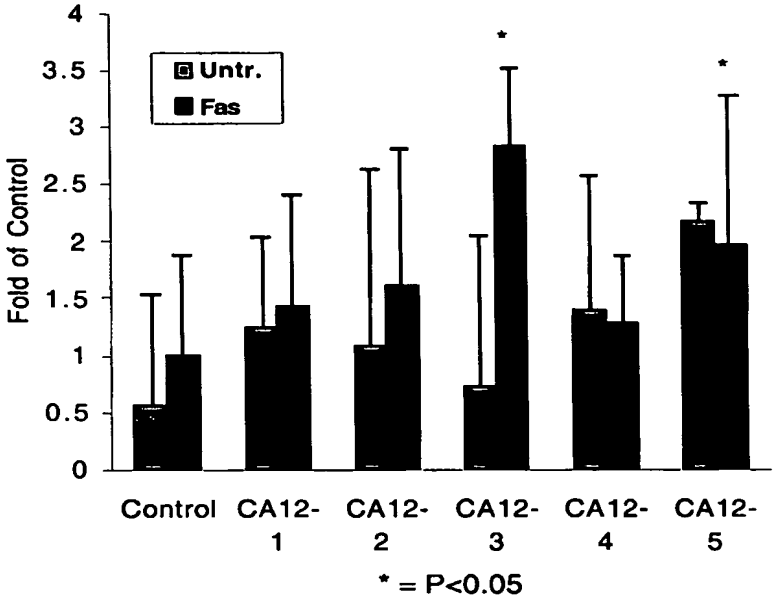

FIGURE 18A

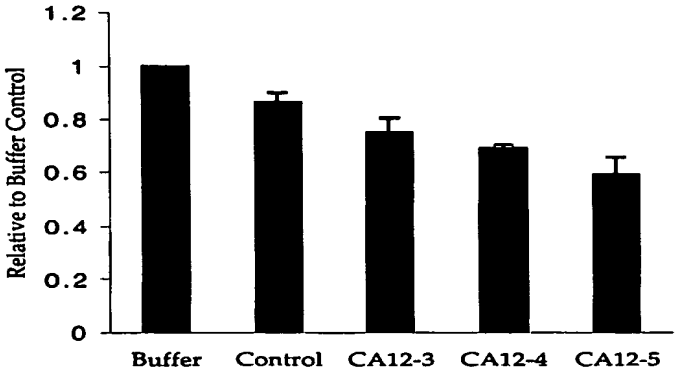

FIGURE 18B

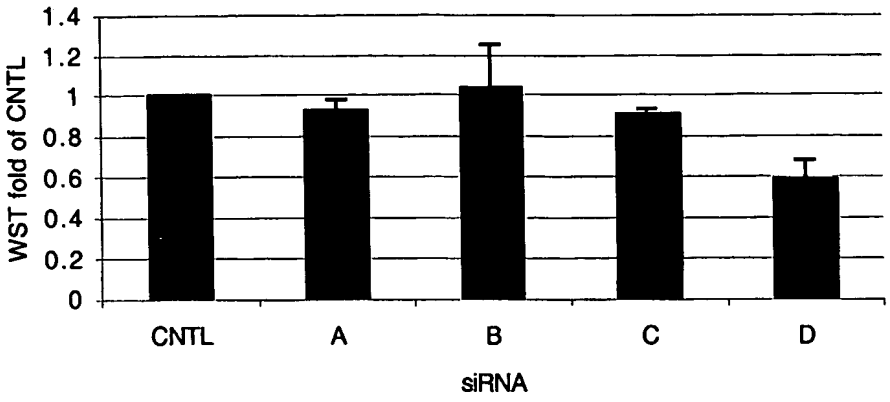

FIGURE 19

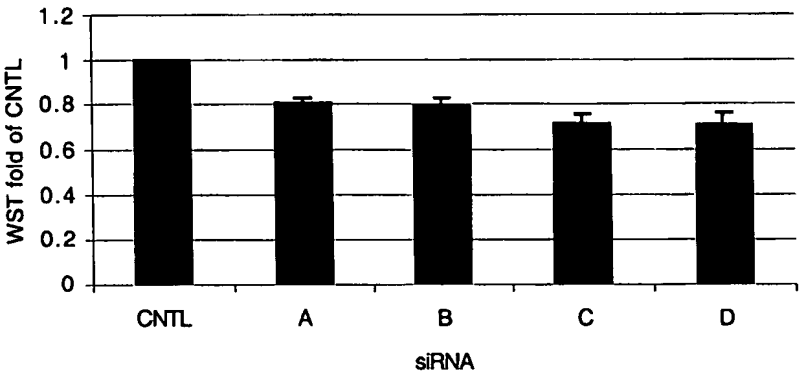

FIGURE 20A

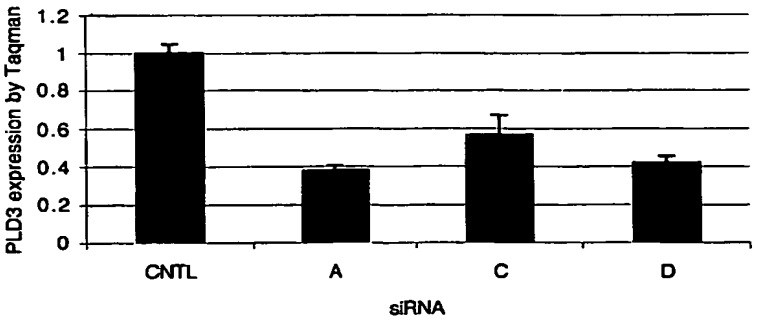

FIGURE 20B

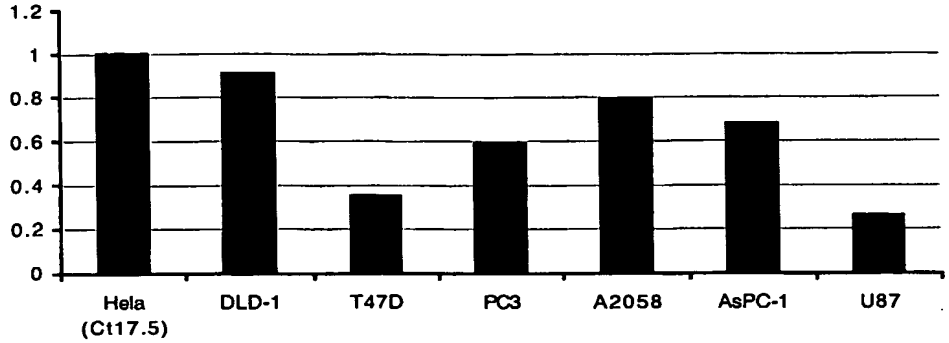

FIGURE 21

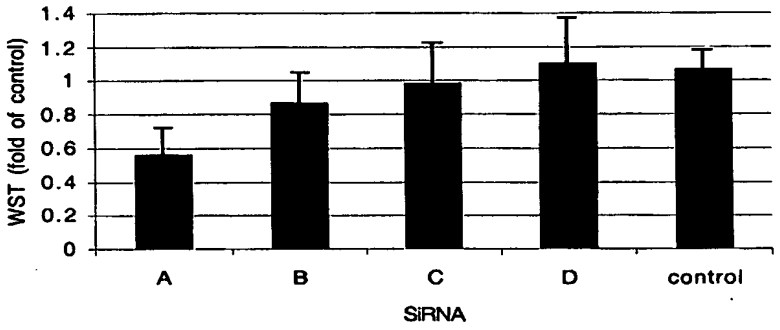

FIGURE 22A

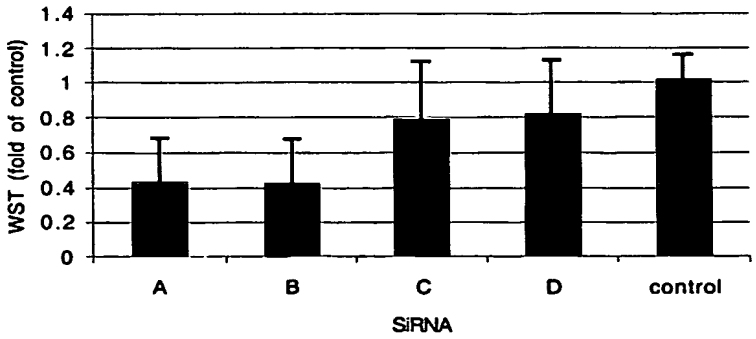

FIGURE 22B

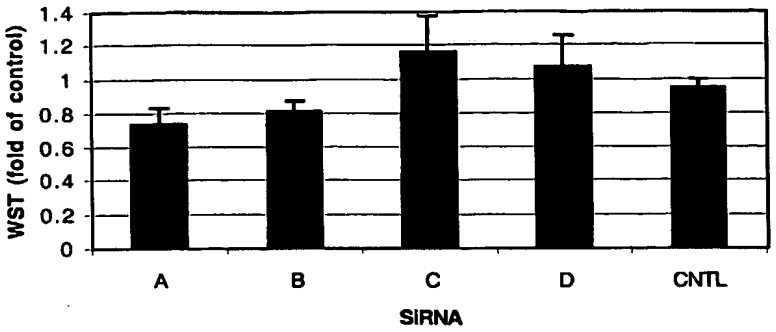

FIGURE 23A

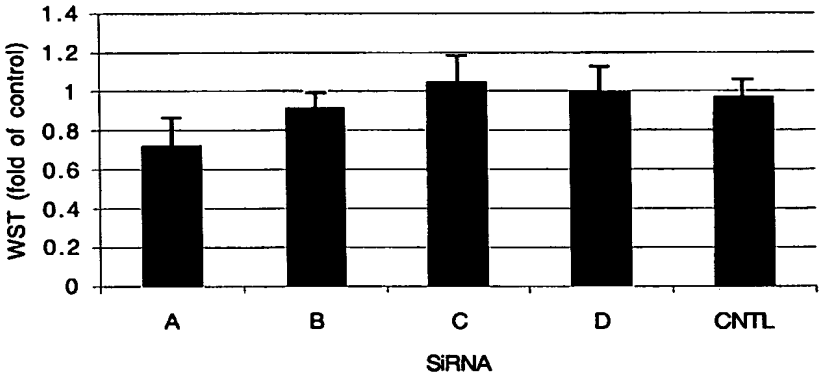

FIGURE 23B

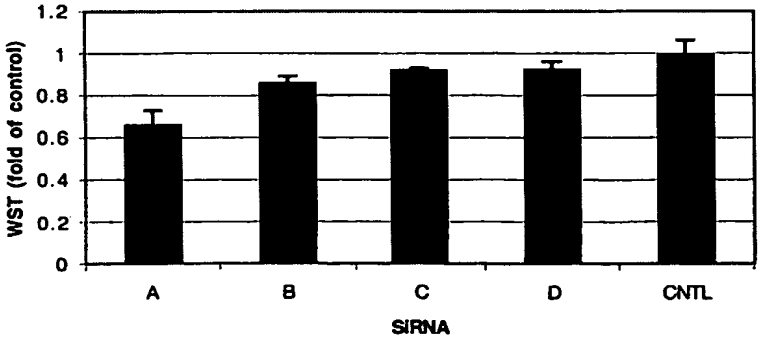

FIGURE 24

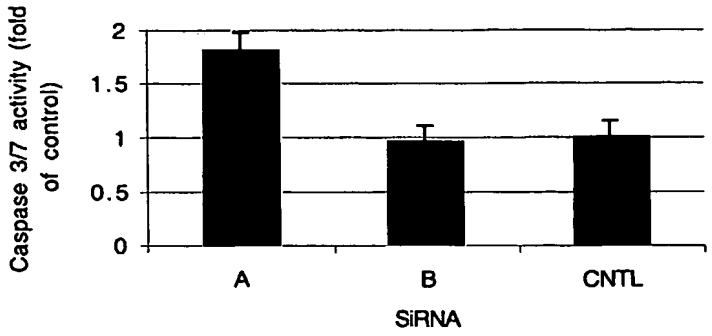

FIGURE 25

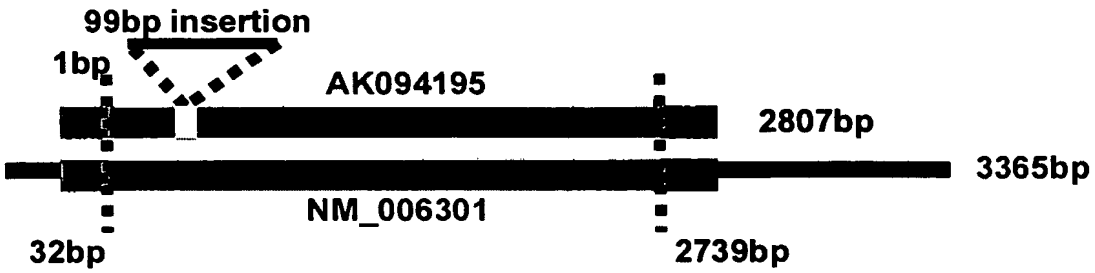

FIGURE 26

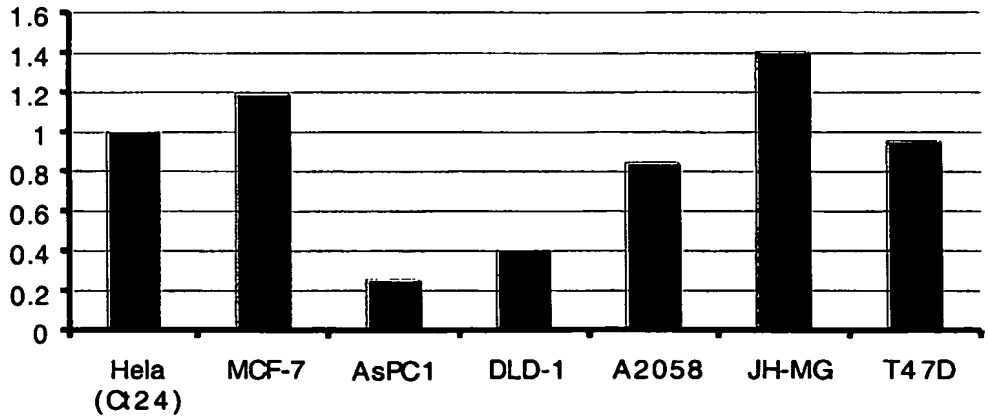

FIGURE 27

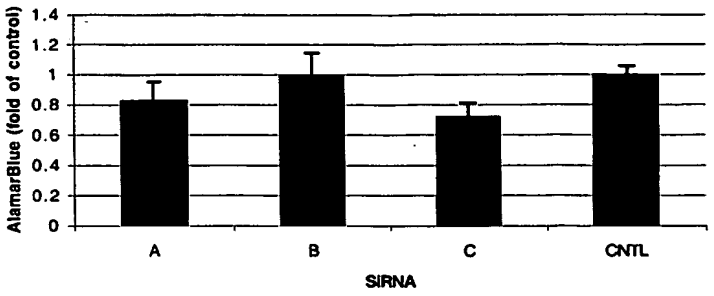

FIGURE 28A

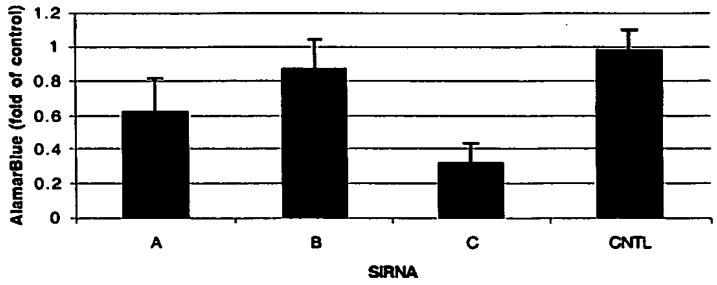

FIGURE 28B

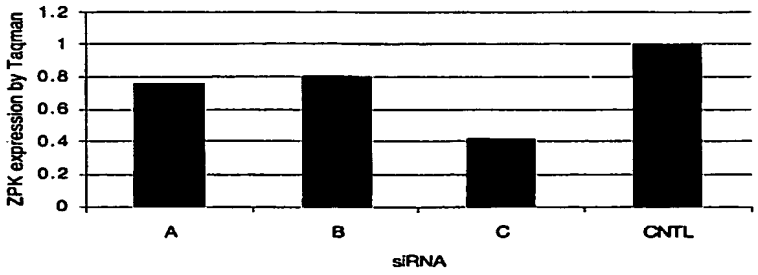

FIGURE 28C

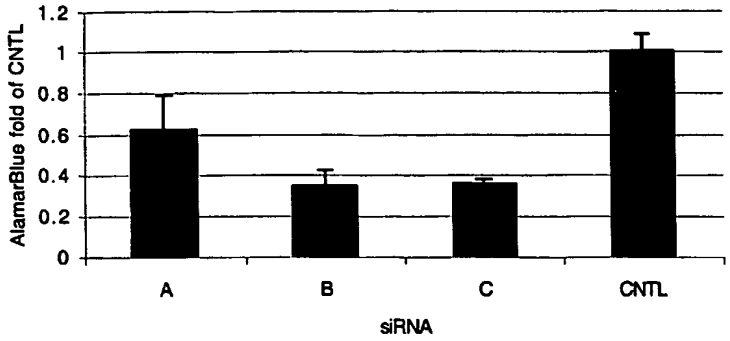

FIGURE 29A

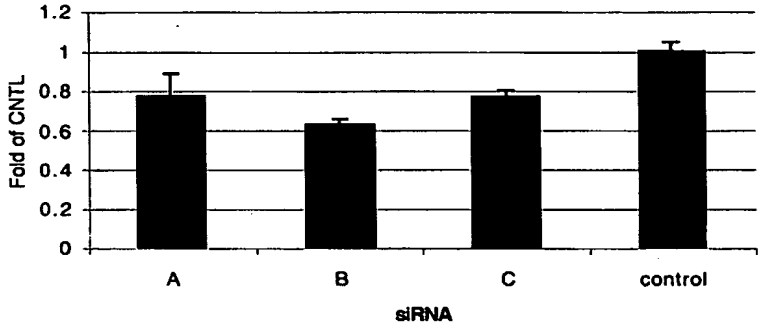

FIGURE 29B

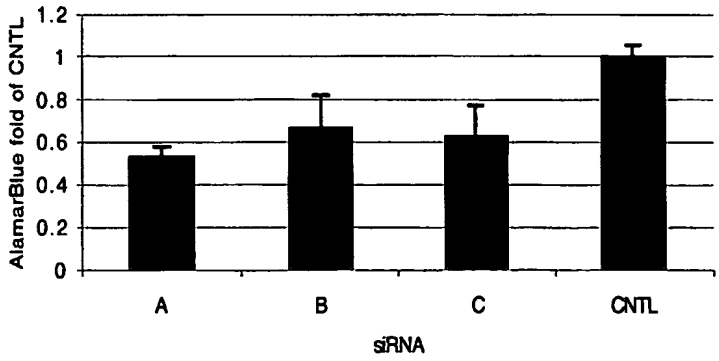

FIGURE 29C

HCT116

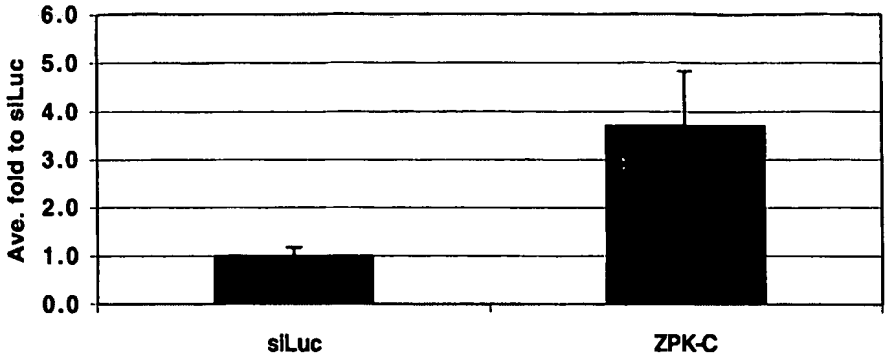

FIGURE 30A

PC3M

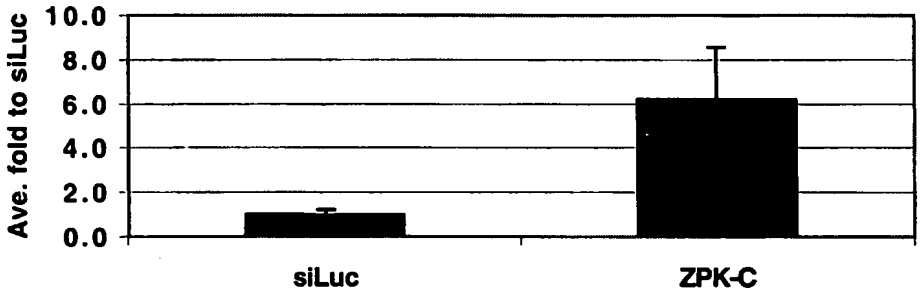

FIGURE 30B

MDAMB231

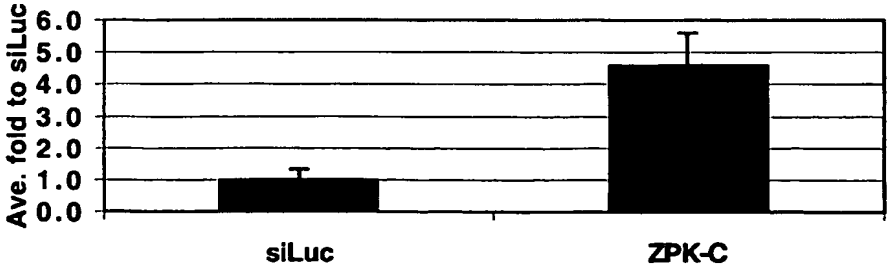

FIGURE 30C

ZPK Variant 1 DNA Sequence (SEQ ID NO:13)

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gtctacccta agtgaggcat ccatgcgcaa gctggaccca gacacttctg actgcactcc     180
cgagaaggac ctgacgccta cccagtgtgt acttcgagat gtggtacccc ttggtgggca     240
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cagtgtcctg cagctacatg agcaggatgc agggggccca gggggagcag ctgggtcacc     360
tgagagtcgg gcatccagag ttcgagctga cgaggtgcga ctgcagtgcc agagtggcag     420
tggcttcctt gagggcctct ttggctgcct gcgccctgtc tggaccatga ttggcaaagc     480
ctactccact gagcacaagc agcagcagga agacctttgg gaggtcccct ttgaggaaat     540
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cggggaggag gtggctgtga agaaggtgcg agacctcaaa gaaaccgaca tcaagcactt     660
gcgaaagctg aagcacccca acatcatcac tttcaagggt gtgtgcaccc aggctccctg     720
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caacagcgtt gatgccttgc ggcccccagc ttccctccct ccatgaaagc cactcgtatt    2760
ccttgtacat agagaaatat ttatataaat tatatatata tacatat                  2807
```

FIGURE 31

ZPK Variant 1 Amino Acid Sequence (SEQ ID NO:14)

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LEGLFGCLRP VWTMIGKAYS TEHKQQQEDL WEVPFEEILD LQWVGSGAQG AVFLGRFHGE    180
EVAVKKVRDL KETDIKHLRK LKHPNIITFK GVCTQAPCYC ILMEFCAQGQ LYEVLRAGRP    240
VTPSLLVDWS MGIAGGMNYL HLHKIIHRDL KSPNMLITYD DVVKISDFGT SKELSDKSTK    300
MSFAGTVAWM APEVIRNEPV SEKVDIWSFG VVLWELLTGE IPYKDVDSSA               350
```

FIGURE 32

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